

IN THE CLAIMS:

Please amend Claims 1, 11, 12, 18, 41 and 42 as follows:

1. (Currently Amended) An ambient atmosphere ion thruster system for propelling a craft, said system comprising
 - at least one ambient atmosphere ion thruster,
 - the at least one ambient atmosphere ion thruster comprising at least one pair of permeable electrical members, the at least one pair of permeable electrical members comprising a forward permeable electrical member for receiving ambient atmosphere reaction mass and an aft permeable electrical member, the forward permeable electrical member and the aft permeable electrical member, each having an opposing polarity in relation to one another, for accelerating a plurality of ambient atmosphere reaction mass ions,
 - the at least one ambient atmosphere ion thruster being mounted to the craft for imparting reaction force thereto, said craft having no on-board supply of reaction mass and no lift force applied thereto, and
 - at least one reaction force being imparted to the craft by accelerating the plurality of ambient atmosphere ions.
2. (Original) A system, as recited in Claim 1, further comprising at least one insulating support structure for mechanically connecting the at least one ambient atmosphere ion thruster to the craft, the at least one insulating support structure having at least one electrical feed for electrically connecting the at least one pair of permeable electrical members to an electrical power source.
3. (Original) A system, as recited in Claim 1,

wherein each member of the at least one pair of permeable electrical members is mechanically connected to one another,
wherein a plurality of ambient atmosphere constituents, being intercepted by the at least one pair of permeable electrical members, comprises an intake mass flux, and
5 wherein a plurality of accelerated ambient atmosphere ions, imparting the reaction force to the craft, comprises an exhaust mass flux.

4. (Original) A system, as recited in Claim 1, wherein two ambient atmosphere ion thrusters are fixedly mounted to opposing sides of the craft to each orient an electric field for cooperatively boosting, deboosting, and attitude-controlling the craft along a single axis.

5. - 9. (Withdrawn)

10. (Original) A system, as recited in Claim 1, further comprising at least one means for reversing the polarity of the at least one pair of permeable electrical members for reversing thrust.

11. (Currently Amended) A system, as recited in Claim 1, wherein the at least one ambient atmosphere ion thruster is operable in a path selected from a group consisting essentially of an orbit proximal to any celestial body having a sensible atmosphere and in a free trajectory having a portion traversing a sensible atmosphere.

12. (Currently Amended) ~~A system, as recited in Claim 1, further comprising An ambient atmosphere ion thruster system for propelling a craft, said system comprising at least one ambient atmosphere ion thruster, the at least one ambient atmosphere ion thruster comprising at least one pair of permeable electrical members, the at least one pair of permeable electrical members~~
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comprising a forward permeable electrical member for receiving ambient atmosphere reaction mass and an aft permeable electrical member, the forward permeable electrical member and the aft permeable electrical member, each having an opposing polarity in relation to one another, for accelerating a plurality of ambient atmosphere reaction mass ions,

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the at least one ambient atmosphere ion thruster being mounted to the craft for imparting reaction force thereto, said craft having no on-board supply of reaction mass and no lift force applied thereto, and

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at least one reaction force being imparted to the craft by accelerating the plurality of ambient atmosphere ions;

at least one auxiliary ionizing device selected from a group consisting essentially of an electron bombardment ionizer, a radio frequency ionizer, a microwave ionizer, an extreme ultraviolet ionizer, a flash lamp ionizer, and a magnetic field ionizer for ionizing any un-ionized constituents in the ambient atmosphere.

13. - 14. (Withdrawn)

15. (Original) A system, as recited in Claim 1, wherein the at least one pair of permeable electrical members comprises at least one electrical component selected from a group consisting essentially of at least one pair of electrical grids and at least one pair of porous electromagnetic structures.

16. - 17. (Withdrawn)

18. (Currently Amended) ~~A system, as recited in Claim 1, further comprising An ambient atmosphere ion thruster system for propelling a craft, said system comprising at least one ambient atmosphere ion thruster,~~
~~the at least one ambient atmosphere ion thruster comprising at least one pair of~~

5 permeable electrical members, the at least one pair of permeable electrical members comprising a forward permeable electrical member for receiving ambient atmosphere reaction mass and an aft permeable electrical member, the forward permeable electrical member and the aft permeable electrical member, each having an opposing polarity in relation to one another, for accelerating a plurality of ambient atmosphere reaction mass ions,

10 the at least one ambient atmosphere ion thruster being mounted to the craft for imparting reaction force thereto, said craft having no on-board supply of reaction mass and no lift force applied thereto, and

15 at least one reaction force being imparted to the craft by accelerating the plurality of ambient atmosphere ions; and

an electron gun for neutralizing any net operational charge buildup on the craft due to operation of the at least one thruster.

19. (Original) A system, as recited in Claim 12, further comprising an electron gun for neutralizing any net operational charge buildup on the craft due to operation of the at least one thruster.

20. (Original) A system, as recited in Claim 1, wherein the at least one thruster is mounted to the craft in a disposition selected from a group consisting essentially of outboard and inboard.

21. - 40. (Withdrawn)

41. (Currently Amended) An ambient atmosphere ion thruster system for propelling a craft, said system comprising
at least one ambient atmosphere ion thruster,

the at least one ambient atmosphere ion thruster comprising at least one pair of
5 permeable electrical members, the at least one pair of permeable electrical members comprising a forward permeable electrical member for receiving ambient atmosphere reaction mass and an aft permeable electrical member, the forward permeable electrical member and the aft permeable electrical member, each having an opposing polarity in relation to one another, for accelerating a plurality of ambient atmosphere reaction mass
10 ions,

the at least one ambient atmosphere ion thruster being mounted to the craft for imparting reaction force thereto, said craft having no on-board supply of reaction mass
and no lift force applied thereto,

at least one means for reversing the polarity of the at least one pair of permeable
15 electrical members for reversing thrust, and

at least one reaction force being imparted to the craft by accelerating the plurality of ambient atmosphere ions.

42. (Currently Amended) A system as recited in Claim 1 ~~and or~~ Claim 41, wherein the ambient atmosphere reaction mass comprises at least one ~~molecular~~ specie selected from the group consisting of hydrogen (H₂), ~~helium~~ (He), nitrogen (N₂), oxygen (O₂), free monatomic hydrogen (H), monatomic nitrogen (N), monatomic oxygen (O), helium
5 (He), argon (Ar), methane (CH₄), xenon (Xe), ~~free nitrogen (N), ionized nitrogen atoms, ionized nitrogen molecules, ionized methane, and ionized oxygen atoms~~ ionized hydrogen atoms or molecules, ionized nitrogen atoms or molecules, ionized oxygen atoms or molecules, ionized helium, ionized argon, ionized methane and ionized xenon, any and all of which exist as a result of natural processes that are independent of the
10 presence or operation of the at least one ambient atmosphere ion thruster.